Protocol Information

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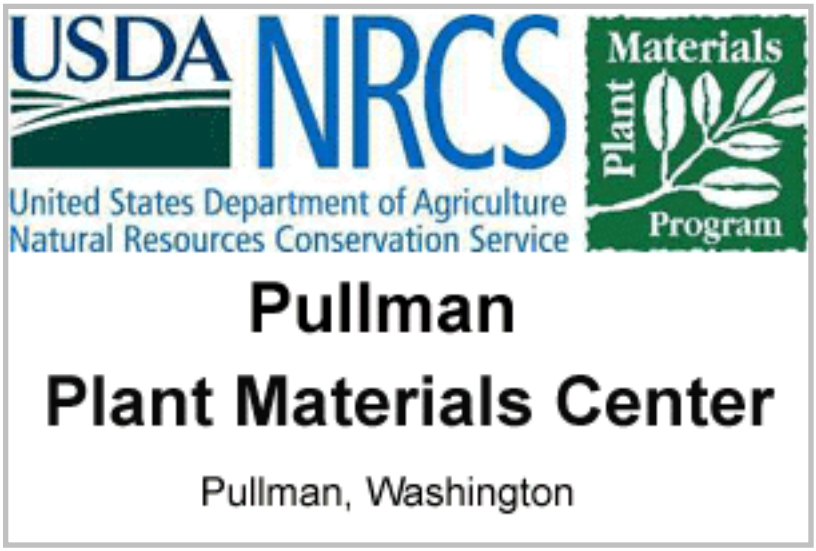

Family Scientific Name:	**Asteraceae**
Family Common Name:	**Sunflower**
Scientific Name:	***Gaillardia aristata* Pursh ' '**
Common Synonym:	**' '**
Common Name:	**Blanketflower**
Species Code:	**GAAR**
Ecotype:	**Paradise Creek drainage, Pullman, WA.**
General Distribution:	**Western North America east to Saskatchewan and south to New Mexico, except Nevada. Also found in the north central and northeastern states. Mean annual precipitation range is from 16-30 inches (USDA NRCS 2006).**
Propagation Goal:	**Plants**
Propagation Method:	**Seed**
Product Type:	**Container (plug)**
Stock Type:	**10 cu. in.**

Time To Grow:	**4 Months**
Target Specifications:	**Tight root plug in container.**
Propagule Collection:	**Fruit is an achene which is grey in color and ripens in August. Seed maturity is indeterminant. Seed is collected by cutting the stem below the flower head when the seed begins to fall from the inflorescence. Seed can also be collected by hand without cutting the stem, but is prickly and can irritate the fingers. Seed can be collected using a vacuum. This removes only mature seed, leaving immature seed to ripen, and reduces the amount of trash which subsequently must be cleaned from the seed. Harvested seed is stored in paper bags at room temperature until cleaned.**
Propagule Processing:	**A bristly pappus is attached to the achene. This is difficult to remove and seriously reduces seed flowability and the ability to clean the seed. It can also create feeding problems with mechanical seeding equipment. In trials conducted at the PMC, aggressive attempts to remove the pappus bristles damaged the seed and greatly reduced germination. Best results were obtained by using a belt thresher, or for small amounts, by rubbing between corrugated rubber sheets such as stair tread. This does not remove the bristles, but folds them up so they do not protrude beyond the seed and vastly increases seed flowability. Seed is is then cleaned with an air column separator. Larger amounts are**

	cleaned with air screen equipment. Clean seed is stored in controlled conditions at 40 degrees Fahrenheit and 40% relative humidity. **132,000 seeds/lb (Kingery et al 2003)** **199,000 seed/lb (Hassell et al 1996).** **We determined 186,436 seeds/lb or 411 seeds/gram for this ecotype.**
Pre-Planting Treatments:	**Under laboratory conditions, seed collected from Washington germinated at 84% under alternating light/dark cycles and alternating temperatures of 20/30 degrees Centigrade, while seed subjected to alternating temperatures of 20/30 degrees Centigrade in the dark germinated at 80% (Maguire & Overland 1959).** **Untreated seed germinated at 85% or better in trials conducted at the PMC.**
Growing Area Preparation/ Annual Practices for Perennial Crops:	**In January seed is sown in the greenhouse in 10 cu. in. Ray Leach Super cell conetainers filled with Sunshine #4 and covered lightly. A thin layer of pea gravel is applied to prevent seeds from floating. A 1/4 to 1/2 inch head space is maintained in conetainers to allow deep watering. Conetainers are watered deeply.**

Establishment Phase:	**Medium is kept moist until germination occurs. Germination usually begins in 5-7 days and is complete in 14-16 days.**
Length of Establishment Phase:	**2 weeks**
Active Growth Phase:	**Plants are watered deeply every other day and fertilized once per week with a complete, water soluble fertilizer containing micro-nutrients.**
Length of Active Growth Phase:	**3 months**
Hardening Phase:	**Plants are moved to the cold frame in late March or early April, depending on weather conditions. They are watered every other day if the weather is cool, and every day during hot, dry spells.**
Length of Hardening Phase:	**2-4 weeks**
Harvesting, Storage and Shipping:	
Length of Storage:	
Outplanting performance on typical sites:	**Transplanting is done in early May by using an electric drill and portable generator to drill 1.5 inch diameter holes at the planting site. Survival in seed increase plantings without competing vegetation exceeds 95%. Transplanting into sites with existing vegetation reduces survival and vigor depending on weather conditions following planting. Flowering and seed production may occur the same year as transplanting.**

Other Comments: **Plants are short-lived but perpetuate themselves well by abundant seed production.**
No insect problems have been noted.
Rodents will sometimes eat part of the crown during the winter, but the plants generally survive unless damage is severe.
***Gaillardia aristata* should be seeded in early spring in Idaho (Kingery et al 2003)**
Preliminary results from direct seeding trials at the PMC indicate spring seedings generally result in more consistent stands than fall seedings.

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Citation:

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